The operation principle of the special equipment of the present invention is : when the weaving machine works , during beating-up, the straight and slant dents the spacing between which is variable is made to move up and down reciprocatingly relative to the slay , therefore the warp restricted by the different positions of the reed slant dents produces warp straight-slant state of different degrees , resulting in non perpendicular crossing when the warp and weft are entered into the fell of cloth , thereby longitudinal curve strips are formed in the warp scope which passes through each dent segment slant reed . During weaving , each dent segment forms a complete pattern by a single up and down reciprocating movement. In the present invention , because the diversity of the specifications of the metal reed with the straight and slant dents the spacing between which is variable (including reed number , sparseness/denseness ratio , straight and slant dents ratio , dent segment width ,etc) and the different arrangement of the process condition of the travel distance of the lifting and descending cam and the speed of change gearing , the variation of the state of the pattern of the curve fabric can be without limit .

Industrial Applications

In the fabrics woven by means of the present invention , a part or the whole part of warp presents non perpendicular crossing with the weft , and viewed from the outer appearance of fabric , the warp of the cloth face side presents orderly bending state . With the warp being arranged in a complementary varied sparseness and denseness manner , the face side of the cloth can produce obvious or hidden graduated shade or clouding patterns which have excellent curve states , thereby it can significantly upgrade the grade of the products and increase the added value and capacity of competition of the product .

Claims

1. A kind of method for weaving warp curve fabric of the shuttle woven fabrics , characterized in that it includes the following steps :

a) Straight and slant warp let-off : by means of the cooperation of the warp let-off of the weaving machine , feeding the warp on the loom beam to the cloth-fell of fabric , the fed quantity of warp matches the take-up quantity required by the take-up unit , during the course of feeding warp , the lifting and descending unit draws the metal reed with the straight and slant dents the spacing between which is variable to make up and down reciprocating movement and to make the warp restricted by the slant reed blade of the metal reed to form the slant line state with respect to the fell of cloth , in

which state , the slant degree varies and the warp will be sent to the fell of cloth of the fabric in straight and slant line state .

b) Shedding : The warp is divided into two upper and lower layers according to the process conditions of the fabric by the shedding unit of the weaving machine to form a rhombus shed and the shed thus formed makes the alternating up-down movement to provide the space for weft insertion .

c) Weft insertion : Under the action of the weft insertion unit , the weft insertion device inserts the weft between the two layers of the warp which have formed into a rhombus shed .

d) Beating up by lifting and descending movement : beating up the weft into the fell of cloth by means of the lifting and descending motion of the straight and slant dent metal reed mounted in the sliding groove of the slay and by making the forward and backward sector swing following the slay .

e) Take up : the take-up unit draws the fabric away from the fell of cloth .

2. The method as claimed in Claim 1 , characterized in that the range of the lifting and descending and the speed of the lifting and descending mechanism can be changed according to requirement of the process .

3. A kind of warp curve fabric of shuttle woven fabrics , characterized in that the fabric products are formed by the slant line let-off warp and weft which are in a non perpendicular crossing manner , the said warp presents gradual change and orderly curve arrangement in the fabric, the outer appearance of the fabric has obvious or hidden warp curve patterns .

4. The warp curve fabric of the shuttle woven fabrics according to Claim 3 , characterized in that the said warp and weft are the raw materials of various textile fibers, the colors of which may be the same or different .

5. A kind of special equipment for weaving warp curve fabrics , characterized in that it includes the lifting and descending unit connected to the metal reeds on the weaving machine and the driving mechanism which drives the lifting and descending unit , the said metal reed is a reed with straight and slant dents the spacing between which is variable , said reed with straight and slant dents the spacing between which is variable includes reed balk , reed blade and side reed crosspieces, the said reed blade is formed by the upper reed balk and the lower reed balk , the said reed blade has multiple blades , which are respectively inclinedly or vertically fixed between the upper reed balk and the lower reed balk ; there are two side reed crosspieces which are located on the two ends of the metal reeds and are fixed between the upper reed balk and the lower reed balk , the said driving mechanism is disposed between the lifting and descending unit and the cloth roller of the weaving machine .

6. The special equipment for weaving warp curve fabrics according to Claim 5 , characterized in that , the reed with the straight and slant dents the spacing between which is variable is formed by the combinations of multiple dent segments, the reed blades of each dent segment are arranged in a manner of sparse on upper part and dense on lower part or sparse on lower part and dense on upper part; in each dent segment , there is one or multiple reed blades arranged in upright direction . The reed blades which form each dent segment are arranged in a sparse and dense straight-slant dent combination form .

7. The special equipment for weaving warp curve fabrics according to Claim 5 , characterized in that the special equipment includes also a sliding groove which is fixed on the frame , the two ends of the reed with the straight and slant dents the spacing between which is variable are disposed in the sliding groove and can lift and descend in the sliding groove .

8. The special equipment for weaving warp curve fabrics , characterized in that the special equipment includes also a bush mounted on swing shaft of the weaving machine, said lifting and descending unit is fixedly mounted on the bush .

9. The special equipment for weaving warp curve fabrics according to Claim 5 , characterized in that the lifting and descending unit is formed by a lifting and descending mechanism which can change lifting and descending speed and the travel distance of the lifting and descending motion .

10. The special equipment for weaving warp curve fabrics according to Claim 5 , characterized in that the said driving mechanism is a chain type driving mechanism, the driving chain wheel of which is mounted on the cloth roller of the weaving machine and the driven chain wheel is mounted on the bush of swing shaft of the weaving machine .